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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/758,598

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EXAMINER

LIN, JAMES

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PAPER NUMBER

1792

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/758,598	<b>Applicant(s)</b> NISHIKAWA ET AL.	
	<b>Examiner</b> Jimmy Lin	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama (U.S. Patent No. 6,590,335) in view of Yamagata et al. (U.S. Publication No. 2002/0142697) and Matsuura et al. (U.S. Publication No. 2002/0063844).

Nagayama discloses a method of repairing an electroluminescent (EL) display with the irradiation of a laser. The EL display comprises an EL layer formed between an anode and a cathode (Fig. 1). A particle 20 on the EL display causes a defect and a short circuit. The defect is detected by means of visual inspection using a microscope or the like, and then laser irradiation is performed (col. 5, lines 30-67). The laser removes part of the electrode layer 104 around the particle (Fig. 2C-2D).

Nagayama does not explicitly teach forming a high resistivity region as a result of a melting of the EL layer by the laser beam. However, Yamagata discloses a method of repairing defects in an EL layer (abstract; [0004]-[0005]), wherein the repair comprises of turning the defect EL portion into an insulator with a laser [0058]. Turning the EL layer into an insulator is essentially melting the EL layer. Yamagata teaches that such a method of repair is operably equivalent to the turning the cathode or anode into an insulator (i.e., the repair method of Nagayama). The teachings of Yamagata would have presented a recognition of equivalency in the prior art and would have presented strong evidence of obviousness in substituting one for the other in a process of repairing an EL layer. The substitution of equivalents requires no express suggestion. See MPEP 2144.06.II. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a laser to melt the EL layer as taught in Yamagata in the process of repairing the EL defect of Nagayama with a reasonable expectation of success.

Nagayama and Yamagata do not explicitly teach that the laser beam is not directly incident on the detected foreign substance. However, Yamagata does teach that the laser repair

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method can be done by physically separating the short circuit location of the defect portion with laser irradiation [0059] while Matsuura teaches that it was well known to use a laser to form a cut area around a portion of the substrate in order to isolate that portion. The laser cut electrically separates the portion from the remainder of the substrate without the laser being directly incident on the portion ([0026]; Figs. 1 and 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have irradiated the portions around the defect in order to have physically separated and isolated the defect of Nagayama without the laser beam being directly incident on the defect with a reasonable expectation of success because Matsuura teaches that such a method of isolation was operable in the art. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 2: Nagayama and Yamagata do not explicitly teach that the laser beam irradiation is repeated a plurality of times. However, one of ordinary skill in the art would have expected similar results using multiple steps of laser beam irradiation to repair the EL element defect as compared to only using one laser beam irradiation step. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have irradiated the EL element defect a plurality of times in order to repair the EL element with a reasonable expectation of success and with predictably results.

Claims 3-4: Yamagata teaches that the wavelength of the laser beam can range from 375 to 900 nm. Overlapping ranges are prima facie evidence of obviousness (see MPEP 2144.05.I.). It would have been obvious to one having ordinary skill in the art to have selected the portion of Yamagata's wavelength range that corresponds to the claimed range.

Claims 5-6: Yamagata does not explicitly teach that the irradiated region of the display panel is away from the defect by a distance of 5  $\mu\text{m}$  to 10  $\mu\text{m}$ . However, Yamagata does teach that the beam size of the laser can be larger than that of the defect portion [0061]. One of ordinary skill in the art would have recognized that any beam size larger than the size of the defect would have been operable. Yamagata exemplifies a beam size of 1  $\mu\text{m}$  to 3  $\mu\text{m}$ . Because the exemplified range would necessarily be larger than the size of the defect, a beam size larger than 3  $\mu\text{m}$  would necessarily be larger than the defect. Therefore, it would have been obvious to

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one of ordinary skill in the art at the time of invention to have used any beam size larger than the size of defect, including a beam size within range of 5  $\mu\text{m}$  to 10  $\mu\text{m}$ , with a reasonable expectation of success and with predictable results because Yamagata reasonably suggests that the beam size of the laser can be larger than the defect.

Claim 7: Nagayama, Yamagata, and Matsuura do not explicitly teach that the high resistivity region is in contact with an entire lateral edge of the foreign substance. However, Yamagata reasonably suggests that the laser can be applied directly at the defect, and Matsuura reasonably suggests that the laser can be applied at the periphery portions of the defect. One of ordinary skill in the art would have readily recognized that either option would have been operable and that the combined use of both methods would have produced predictable results. Therefore, the application of the laser both at and around the defect portion would have been an obvious modification to one of ordinary skill in the art such that the laser forms a high resistivity region in contact with an entire lateral edge of the foreign substance.

3. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama '335 in view of Yamagata '697 and Matsuura '844 as applied to claims 1-2 above, and further in view of Kodama (JP 2000-195677).

Nagayama, Yamagata, and Matsuura are discussed above, but do not explicitly teach that the irradiated region of the display panel is 5  $\mu\text{m}$  to 10  $\mu\text{m}$  away from the foreign object. However, Kodama teaches a method of detecting and repairing a defect in an EL display via a laser irradiation method [0081]. The luminescence around the repaired portion will slowly degrade and diminish such that the entire pixel may become non-luminescent with time [0081]-[0082]. Thus, the irradiated region can be beyond the immediate area of the foreign substance as long as the irradiated region is within a single pixel, since the entire pixel will eventually become non-luminescent anyway. It would have been obvious to one of ordinary skill in the art at the time of invention to have irradiated any portion of the EL element around the foreign substance within a single pixel, including the claimed distance away from the foreign substance, with a reasonable expectation of success in order to have further prevented a short-circuit.

***Response to Arguments***

4. Applicant's arguments filed 5/16/2008 have been fully considered but they are not persuasive.

Applicant argues on pg. 4 that Yamagata explains that the turning of the defect portion 207 into an insulator is made by "oxidation" and that persons of ordinary skill in the art would have known that an oxidation of a defect portion does not amount to a melting of that portion. However, Yamagata teaches that the film can be made into an insulator by oxidation or that the film can be completely removed. These methods are different in that a different power of the laser is being used [0059]. In essence, the turning of the film into an insulator is a process of a lesser degree of the process of completely removing the film because the oxidation method seems to be performed with the laser at a lower power. When the film is completely removed, the material is vaporized, and melting would have necessarily occurred prior to vaporization. Because the film removal method involves vaporization, which includes melting, of the film material and because the oxidation method is merely a process of a lesser degree of the film removal method, the oxidation process of Yamagata would have melted the layer to some degree.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Asai (JP 2003-178871) teaches a method of repairing a defective portion of an organic EL layer (abstract; [0008]).

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit  
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